

Appl. No. 10/590,340  
Amdt. dated: October 16, 2011  
Reply to Office Action of July 18, 2011

**Amendments to the Claims:**

Please amend claims 6, 7 and 8 as follows:

1. (Withdrawn) A high silicon stainless steel which mainly comprises a microstructure with a grain size of 15 .mu.m or less and which has an elongation at break of 12% or higher.
2. (Withdrawn) A high silicon stainless steel which mainly comprises a microstructure with a grain size of 7 .mu.m or less and which has an elongation at break of 14% or higher.
3. (Withdrawn) A high silicon stainless steel according to claim 1, wherein the high silicon stainless steel is subjected to thermal aging at a temperature range of 480 to 550.degree. C., and archives an elongation at break of 7% or higher after the thermal aging.
4. (Withdrawn) A high silicon stainless steel according to claim 3, wherein the high silicon stainless steel has a Brinell hardness of 450 or higher.
5. (Withdrawn) A spring which is made of the high silicon

stainless steel according to claim 1.

6. (Currently amended) A process for manufacturing a ~~high~~-silicon stainless steel which comprises the step of forging a ~~high~~-silicon stainless steel containing Si in 3.5 to 7.0% by weight or a master alloy thereof, the forging step including:

a load application step for applying one of an impact load and/or a static load to one of the ~~high~~-silicon stainless steel or and the master alloy, wherein a surface temperature of the ~~high~~-silicon stainless steel or the master alloy is kept at 1,100°C or higher, and is later dropped to a temperature range of 950°C or below and not so low as to break the ~~high~~-silicon stainless steel or the master alloy,

such that the process provides a steel material which mainly comprises a microstructure with a grain size of 15  $\mu\text{m}$  or less.

7. (Currently amended) A process for manufacturing a ~~high~~-silicon

stainless steel which comprises the step of forging a ~~high~~the silicon stainless steel containing

Si in 3.5 to 7.0% by weight or a master alloy thereof, the forging step including:

a first load application step for applying one of an impact load and/or a static load to the ~~high~~-silicon stainless steel or the master alloy, wherein a surface temperature of the ~~high~~-silicon stainless steel or the master alloy is kept at 1,100°C or higher, and is later dropped to a temperature range of 950°C or below and not so low as to break the ~~high~~-silicon stainless steel or the master alloy; and

a second load application step for applying at least one of an impact load and/or a static load to the ~~high~~-silicon stainless steel or the master alloy, wherein a surface temperature of the ~~high~~-silicon stainless steel or the master alloy is kept at a temperature range from 850 to 1,050°C, and is ~~later~~ changed to a temperature range of 950°C or below and not so low as to break the ~~high~~-silicon stainless steel or the master alloy,

wherein the first load application step is followed by the second load application step ~~once or more~~at least one time,

such that the process provides a steel material which mainly comprises a microstructure with a grain size of 15  $\mu\text{m}$  or less.

8. (Currently Amended) A process for manufacturing a high-silicon stainless steel according to claim 7,

wherein a lowest surface temperature for the second load application step is lower than a lowest surface temperature for the first load application step,

wherein the second load application step is conducted more than once, during which a lowest surface temperature for each second load application step is lower than a lowest surface temperature for a previous second load application step so as to reduce a grain size little by little, and

wherein the grain size is controlled by changing the number of times for conducting the second load application step,

such that the production process provides a steel material which mainly comprises a microstructure with a grain size of 15  $\mu\text{m}$  or less.

9. (Withdrawn) A high silicon stainless steel according to claim 2, wherein the high silicon stainless steel is subjected to thermal aging at a temperature range of 480 to 550 degree. C., and archives an elongation at break of 7% or higher after the thermal aging.

10. (Withdrawn) A high silicon stainless steel according to claim

9, wherein the high silicon stainless steel has a Brinell hardness of 450 or higher.

11. (Withdrawn) A spring which is made of the high silicon stainless steel according to claim 2.

12. (Withdrawn) A spring which is made of the high silicon stainless steel according to claim 3.

13. (Withdrawn) A spring which is made of the high silicon stainless steel according to claim 4.

14. (Withdrawn) A spring which is made of the high silicon stainless steel according to claim 9.

15. (Withdrawn) A spring which is made of the high silicon stainless steel according to claim 10.